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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,064	07/01/2003	Donald J. Curry	117299	3501

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EXAMINER	
DHINGRA, PAWANDEEP	
ART UNIT	**PAPER NUMBER**
2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/612,064	CURRY ET AL.	
	Examiner	Art Unit	
	Pawandeep S. Dhingra	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 8,11-20* is/are rejected.

7)☒ Claim(s) *7, 9-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/11/2003, 05/12/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

   The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4, 14, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

   Claims 4, 14, and 20, recite "each of some of the one-dimensional filters", the terms each and some have two distinct meanings, which render the claims indefinite. Either term "each" or "some" shall be used to provide a standard for ascertaining the requisite degree, such that one of ordinary skill in the art would be reasonably apprised of the scope of the invention.

Double Patenting

3. Claims 1-20 are rejected on the ground of nonstatutory double patenting over claims 1-43 of U. S. Patent No. 7,218,418 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

Application 10/612064	US Patent No. 7,218,418
filtering the image signal using pair of selected filters from a bank of filters to produce a pair of filter output signals	filtering the image signal using a bank of filters to produce a set of filter output signals
generating at least one first control signal based on the image signal using a control module	generating at least one first control signal based on the image signal and at least one filter output signal, using a control module
dynamically blending the pair of filter output signals in accordance with the first control signal to produce a de-screened output signal, using a blend module	dynamically blending the filter output signals in accordance with the first control signal to produce a de-screened output signal, using a blend module, the first control signal including information regarding which of the filter output signals are to be blended and the proportion of blending

The above analysis of claim 1 is exemplary of all the pending claims. The rest of the claims recite the same limitations or broader versions as claimed in the U. S. Patent No. 7,218,418.

Note the comparison above, claims 1-20 of the instant application is not patentability distinct from claim 1-43 of the U. S. Patent No. 7,218,418 because claims 1-20 of the instant application are rendered obvious over claims 1-43 of U. S. Patent No. 7,218,418. For example, claim 1 of the instant application includes the limitation - selecting a pair of filters from a bank of filters such that pair of filter output signals can be produced. However, it would have been obvious to select a pair of filters since the output is also a set of filter output signals as disclosed in the U. S. Patent No.

7,218,418. Moreover, since the claims are in "comprising" format they cover common subject matter and all the limitations in the pending claims are anticipated by the U. S. Patent No. 7,218,418 claims.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Examiner Notes

Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been

obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4, 8, are rejected under 35 U.S.C. 103 as being unpatentable over Fan et al., US 6,839, 152 in view of Acharya, US 6,725,247.

Re claim 1, Fan et al. discloses a method for de-screening an image signal (see abstract), the method comprising the operations of: (a) determining a control signal (i.e. image signal from element 32 in figure 3) to select a pair of filters (elements 36 and 38 in figure 3); (b) filtering the image signal (i.e. signal from halftone image buffer, see element 32 in figure 3) using the select pair of filters (low pass filter and notch filter, see figure 3) to produce a pair of filter output signals (see figure 3); (c) generating at least one first control signal (element 42 in figure 3) based on the image signal (element 32 in figure 3) using a control module (i.e. low pass filter, figure 3); and (d) dynamically blending the pair of filter output signals (element 46a and 46b) in accordance with the first control signal (element 42 in figure 3) to produce a de-screened output signal, using a blend module (i.e. element 48 in figure 3) (see figure 3).

Fan et al. fails to disclose a bank of filters.

However, Acharya discloses a bank of filters (see figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the filtering method for de-screening scanned images as disclosed by Fan to include the pyramid filter architecture as taught by Acharya in order to select the pair of filters from the bank of filters for the benefit of "to generate different

blurred images in parallel from a single source image" as taught by Acharya at column 1, lines 53-55.

Re claim 2, Fan fails to further disclose the bank of filters comprises two-dimensional filters, each of the two-dimensional filters being separable into two one-dimensional filters

However, Acharya further discloses, the bank of filters comprises two-dimensional filters (see abstract), each of the two-dimensional filters being separable into two one-dimensional filters (see column 5, lines 4-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the filtering method for de-screening scanned images as disclosed by Fan to include the pyramid filter architecture as taught by Acharya in order to select the pair of filters from the bank of filters for the benefit of "to generate different blurred images in parallel from a single source image" as taught by Acharya at column 1, lines 53-55.

Re claim 3, Fan fails to further disclose each of the one-dimensional filters has a symmetric triangular shape with integer coefficients

However, Acharya further discloses that each of the one-dimensional filters has a symmetric triangular shape (i.e. 3x3 filter) with integer coefficients (see column 1, lines 56-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the filtering method for de-screening scanned images as disclosed by Fan to include the pyramid filter architecture as taught by Acharya in order to select the pair of filters from the bank of filters for the benefit of "to generate different blurred images in parallel from a single source image" as taught by Acharya at column 1, lines 53-55.

Re claim 4, Fan fails to further disclose each of some of the one-dimensional filters has a total weight equal to a power-of-2 number, the total weight being the sum of respective coefficients

However, Acharya further discloses that each of some of the one-dimensional filters has a total weight equal to a power-of-2 number, the total weight being the sum of respective coefficients (see abstract & column 3, lines 34-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the filtering method for de-screening scanned images as disclosed by Fan to include the pyramid filter architecture as taught by Acharya in order to select the pair of filters from the bank of filters for the benefit of "to generate different blurred images in parallel from a single source image" as taught by Acharya at column 1, lines 53-55.

Re claim 8, Fan further discloses receiving, via an interpolation unit (see figure 3) included in the blend module (see figure 3), the filter output signals (see two signals

going into elements 36 and 38, figure 3) and the first control signal (see signal going into element 42, figure 3); blending two signals selected from the filter output signals in accordance with the first control signal (see element 48, figure 3), via the interpolation unit; and producing a blended output signal (see figure 3).

Regarding claims 11-14, and 17-20, they are interpreted and thus rejected for the reasons set forth above in the rejection of claims 1-4, since claims 11-14, and 17-20 disclose an apparatus, and an article of manufacture with program code for carrying out the method that corresponds to the method of de-screening an image signal of claims 1-4, thus the apparatus is inherent and it simply provides structural implementation for the functionality found in image de-screening method claims 1-4.

6. Claims 5-6 are rejected under 35 U.S.C. 103 as being unpatentable over Fan et al. US 6,839,152 in view of Acharya, US 6,725,247 further in view of Cheung et al., US 6,222,945.

Re claim 5, Both Fan and Acharya fail to disclose that the bank of filters comprises lowpass filters having different cutoff frequencies to facilitate reduction of different halftone screen frequencies occurring within a predetermined range.

However, Cheung et al. discloses that the bank of filters (i.e. filter set 25) comprises lowpass filters (see column 4, lines 66-67) having different cutoff frequencies (see column 6, lines 26-29) to facilitate reduction of different halftone screen frequencies occurring within a predetermined range (see column 1, lines 26-37 &

column 3, lines 1-12, note that digital filters are ordered in increasing cutoff frequency in order to have the object edges or the high-frequency content of the original image to be maintained without undesirable blurring).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the filtering method for de-screening scanned images as disclosed by Fan to include the pyramid filter architecture as taught by Acharya and filtering method as taught by Cheung for the benefit of "to generate different blurred images in parallel from a single source image" as taught by Acharya at column 1, lines 53-55, and to utilize a *"method of inverse dithering that is substantially less computationally complex and requires less memory resources than those of methods presently utilized"* as taught by Cheung at column 2, lines 39-42.

Re claim 6, Both Fan and Acharya fail to disclose a number of filters having different filter spans and cascaded in series with one of the filters having a large filter span in the array of filters to produce a super lowpass signal having lowest cutoff frequency.

However, Cheung further discloses a number of filters having different filter spans and cascaded in series with one of the filters having a large filter span in the array of filters to produce a super lowpass signal having lowest cutoff frequency (see column 4, line 66 – column 5, line 4, column 6, lines 12-29, note that the filter of lowest index will produce the low pass signal having lowest cutoff frequency).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the filtering method for de-screening scanned images as disclosed by Fan to include the pyramid filter architecture as taught by Acharya and filtering method as taught by Cheung for the benefit of "to generate different blurred images in parallel from a single source image" as taught by Acharya at column 1, lines 53-55, and to utilize a *"method of inverse dithering that is substantially less computationally complex and requires less memory resources than those of methods presently utilized"* as taught by Cheung at column 2, lines 39-42.

Re claims 15 and 16, claims 15-16 recites identical features, as claims 5-6, except claims 15-16 are an apparatus claims. Thus, arguments made for claims 5-6 are applicable for claims 15-16.

Allowable Subject Matter

Regarding claims 7, and 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose, teach, or suggest the claimed inventions of (in combination with all other limitations in the claims), first control signal including information regarding which of the filter output signals are to be blended and the proportion of blending as set forth in claim 7.

The chrominance processing and un-sharped masked filter included in the blend module for producing the sharpened output signal as set forth in claim 9. Claim 10 is dependent upon claim 9 and further limits the claimed invention.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pawandeep S. Dhingra whose telephone number is 571-270-1231. The examiner can normally be reached on M-F, 9:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler Lamb can be reached on 571-272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Pd
May 29, 2007

TWYLER LAMB
SUPERVISORY PATENT EXAMINER